C-5.6 Use density to determine the mass, volume, or number of particles of a gas in a chemical reaction.

Revised Taxonomy Level 3.2 C_A Apply (use) procedural knowledge

Students did not address this concept in physical science

It is essential for students to

- Understand the volume of a mole of any gas at STP is 22.4 l/mole
  - Use the combined gas law equation to find the volume of a gas under various conditions when given the volume at STP
- Use the molar volume of a gas to perform stoichiometric calculations for gasses.
  - Volume to volume
  - Mass to volume
  - Moles to volume
- Understand the quantitative relationship between density and molecular weight.
  - molecular weight divided by 22.4 liters per mole = density of a gas at STP

Assessment

The revised taxonomy verb for this indicator is implement (use), the major focus of assessment will be for students to show that they can "apply a procedure to an unfamiliar task". The knowledge dimension of the indicator, procedural knowledge means "knowledge of subject-specific techniques and methods" In this case the procedure for solving stoichiometric calculations for chemical reactions involving gasses. A key part of the assessment will be for students to show that they can apply the knowledge to a new situation, not just repeat problems which are familiar. This requires that students have a conceptual understanding of the way that pressure and temperature affect the volume and mass of a gas.